What I’ve Learned About Computing

CS 101. Computers: Applications and Implications

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1 Introduction

When I need to listen to online articles, doing so from my phone is preferable, especially while riding the bus. However, I can set up my laptops to listen as well. On the Chromebook and Mac, I use the Natural Reader Chrome browser extension for this task. Once I select a passage of text to highlight, I can click the Natural Reader extension icon on the Chrome address bar to activate it and click a button to stop it. I prefer this over setting up the MacOS Text to Speech features in the System Preferences area.

I set up Canvas Notifications for all my courses, so I am immediately notified when students have written to me via the Inbox or Assignment Comments. The first deadline is easy to find in the Coming Up list, the Assignment/Module list, or the Calendar. The pattern of due dates is Tuesday night for discussions and Sunday night for projects.

Because I have so many Canvas Discussions to score each week, I use the expand/contract icons and the reveal arrow to reduce the amount of scrolling. Then I click on a single entry of threads I want to read. If I need to find a specific student or topic, then I type it in the search box. Because I make a lot of typos, I use the Edit menu to fix grammar and spelling after my initial submission. I use the link, image, media, and list editing icons to improve the way the threads look. To quickly get to Canvas, I just type part of the word "canvas" and Chrome remembers my options. I choose the correctly spelled URL to get here.

At home, I use a 14" Acer Chromebook computer with a 1080px resolution high definition display. The keyboard is compact and the trackpad is big. The Chrome OS operating system is "edgar" version 10176.72.0 (Official Build) stable-channel and the browser is Chrome 64.0.3282.167, which I found by typing: chrome://system/ into the Chrome browser address bar. This screen loads slowly for some reason. I also found it by clicking on the system settings icon clicking the Device option. The Random Access Memory (RAM) holds 2gb of data so I can have a lot of extensions, tabs, and apps open at once. Read-only Memory (ROM) is harder to locate. I used a Google search to locate articles that tell me I have 8Mb, which is not much, but Chromebooks don’t need a lot because they are just running a browser. The system settings tell me there is an Intel Celeron Central Processing Unit (CPU) number N3160 running at 1.60GHz. The computer comes with an internal Solid State hard drive (SSD) which holds 32Gb of data (software and files). I can plug in two USB devices, one MDMI, and one pair of headphones. It also has a security cable port.
On my Mac, I store course folders in the Documents folder and make aliases for them and/or add them to the Finder sidebar. I don’t use the Desktop area for storage because it doesn’t get included in backups, is difficult to organize, and can slow down processing. I can instead drag an Alias (pointer) of the Documents > Course folders to the Desktop. My Chromebook hard drive (SSD) is not well organized because it is mainly a downloads folder, which I delete periodically after moving the files to folders on my two Google cloud drives. I made folders for each class on the drive and within them, add term-specific folders, then I add Shortcuts (aliases or favorites) to the system menu. All other projects I’m involved in have folders inside folders so I can quickly locate and backup multiple items. Using search is the fastest way to find a file, however. The Chromebook does not have a ‘desktop’ area, so I can’t overrun that area with all of my files, which would slow down processing.

Since I learned to use an Apple IIe computer in 1985, I have been typing with keystrokes. I started with Save, then Open, then close the Window, select All, Bold and now use Esc to stop an action, space bar to pause a movie, Increase and Decrease to zoom in and out or to change the size of fonts.

I use the Language Tool for Chrome to check spelling and grammar I am an inaccurate typist. I described above how I added an extension for Natural Reader and the process is the same. Google Docs and MS Word do have spell checking as well. I also have Grammarly installed but it tends to be slow inside Canvas. It also works well in Wordpress, where I spend a lot of time. I forget to add items to the personal dictionary, which would save me time in the long run.

I set up Google Calendar to import Canvas Calendars for each course using the URL provided in Canvas. However, it doesn’t seem to sync often enough to be helpful. It is there by default when I am logged into my OSU Google account, though. I can change the settings and activate notifications if I like.
2 Prepare to Succeed!

The Writing Samples article shows four ways to write but demonstrates the required style for this course. In general, the paragraphs must be written in the third-person and state who said what with lots of detail. The titles of articles should be hyperlinked to their sources, and keywords must be bolded. There is no need to introduce each article beyond stating the title and what it says. And the writing must be in our own words rather than copied from the textbook.

The Modern Learning article mentions several ways that teaching and learning have changed recently. Learning may include searching for definitions, tutorials, detailed explanations, and viewing interactive media to increase knowledge and skills. Learning can also occur without lectures or books (Baraniuk) and often takes place when students interact with each other around a shared concept, which some call ‘open source’ or ‘crowdsourcing’ or ‘crowdlearning’, as noted by Jeff Howe. Kapur and Bielaczyc says that when groups come up with ideas together, they often begin to understand the structure of solutions, so they can solve big problems. Carol Dweck notes that we retain more knowledge when struggle is involved. Bloom’s Taxonomy classifies learning objectives so that we learn to analyze and create rather than memorize facts. Sugat Mitra suggests that we don’t need teachers when students can teach themselves if they just have access to devices that connect to knowledge banks like a search engine or video channel.

The Obligations article notes that this course is for lower division students from any college. EECS and OSU expect up to a 12-hour per week commitment, though in the summer, it could be more due to the shorter time-frame. Students are expected to write like professionals after using the instructions, videos, and criteria. When research is required, it is a good idea to consult with the Librarians at OSU or Answerland. Students should ask for help using the Canvas Inbox. When students have questions about scores, then they should ask in the Assignment Comments.

The Cyberbullying on the College Campus article mentions that 22% of college students have been bullied online, usually in their social media accounts. Shutting down these account is not always possible so harassment may continue unabated. LGBT students, younger students, and poverty-stricken students are the most-targeted groups. Victims often get severely depressed, self-medicate, drop out, or worse. Students might be victims of flaming, outing, or trolling (public humiliation), exclusion (left out of conversations), harassment/sexual harassment (repeated attacks), stalking (digital and physical information gathering and frightening), masquerading (anonymous or impersonated harassment), and catfishing (recreating
fake media to tarnish one’s reputation). **Title IV** and **Title IX** acts in the USA can help prosecute students who harass marginalized groups. Many social media companies, the FBI, and universities provide a way to report incidences of cyberbullying. Social sites will sometimes help by providing details about removing offending materials from websites.

The [Avoiding Plagiarism](#) article mentions how plagiarism, cheating, and copyright infringement are three separate problems to avoid. **Quotation marks** must be placed around any text that is copied from someone else’s writing. Quote only a few items in a section/chapter. Students must write in their own words otherwise. Students should use a **bibliography** tool to keep track of each source they mention in their writing so that they can easily make inline citations for quotes and other ideas, laws, statistics, etc. If displaying an image or movie, then students need to add a **copyright statement** that uses a symbol, year, and copyright owner’s name. In some cases it is OK not to ask for permission to use other people’s media because of the **Fair Use** provision of the USA Copyright law. **Cheating** by collaborating, using other student’s sources, using work from other class projects, or purchasing finished work isn’t allowed unless specifically stated.

[Checking Originality in TurnItIn](#) diagrams a comparison of plagiarized versus synthesized text with inline citations that use a combination of **hyperlinked titles** and parenthetical references after sentences/paragraphs. The **colored flag icons** with percentages are not as reliable as **looking** at the Originality report. If the report shows any highlighted text, then it can be corrected and **resubmitted** before the deadline. Highlighting of cover pages, common phrases, and bibliography entries can be **ignored**.
3 How the Internet Works

Internet: Wires, Cables, and Wifi describes undersea cables that connect each continent and country to other continents and countries. They span across oceans and contain high-speed fibre optic wires that can send bits of data at the speed of light, which is faster than electricity or copper. Radio waves are the frequency that Wi-Fi signals are sent on from our devices to a router. That router often connects with a modem that uses Ethernet/copper cables to connect to an Internet Service Provider (ISP).

The Internet: Encryption & Public Keys and HTTP and HTML say that Hypertext Transfer Protocol (HTTP) is the language that one computer uses to talk to another computer over the Internet. A computer will use HTTP get requests to ask the other computer for some data. Hypertext Transfer Protocol Secure (HTTPS) is an encrypted version of that data transfer. Modern encryption uses 256 bits to secure a transfer, which would take trillions of years to decrypt. The internet makes use of asymmetric keys and digital certificates between one device and another to create an additional level of security, which is also called Secure Socket Layer (SSL) or Transport Layer Security (TLS). When you see https:// in the browser it means that SSL or TSL is active.

The Internet: Packets, Routing, and Reliability mentions that information (data) sent from one device to another doesn’t stay together or follow a straight path...it is sent in packets, or chunks, of binary code, to various web servers as if in a maze. The maze contains many other web servers that send and receive packets. Some of the packets have cookies attached which the browser can use to speed up logging in or other preferences. Routers send and receive packets via Wi-Fi signals to the modem, which connects to the ISP’s physical cables in the wall of a building. Those cables connect to ISP web servers which reassemble the packets so the entire message can viewed.

The Internet: IP Addresses and DNS says that Transmission Control Protocol/Internet Protocol (TCP/IP) is the name given to the process explained above....the sending and receiving of packets via signals and cables to display web pages. It is the World Wide Web (WWW). Domain Name Servers (DNS) host the names of websites that point to specific Internet Protocol (IP) addresses on web servers. Web servers are large computers designed to store huge amounts of data so humans can view and interact with web pages or stream media.

The Internet: HTTP and HTML explains that browsers are designed to translate and display web pages that humans request from their devices. Browsers read
HyperText Markup Language (HTML), which is a set of tags (or marks) added to text and images to display them with style, functionality, and links. Cascading stylesheets (CSS) are used with web pages to enhance the use of color and fonts. JavaScripts are used to increase the web page’s interactive features. These three languages pull together what the web page users see in the front-end of web pages. Programmers typically build the back-end of websites...the parts we don’t see. The languages evolve over time and are governed by organizations of programmers.

**Images, Pixels, and RGB** describes how HTML pages can include images and movies, however they are requested separately than the HTML pages and may load slower than the text. Images are recreated with pixels, which are one dot of red (R), green (G), and blue (B) light on a screen. The resolution of a screen is the height and width dimension of pixels it has. Density of pixels on the screen allows even more detail. The RGB values for a color are stored in eight bits (a byte) up to 255. Instead of representing color with binary, hexadecimal code is often used because it reduces the complexity of a long set of ones and zeros. Photo filters modify these RGB values.

This diagram illustrates how the Internet works:
4 How Search and Digital Knowledge Works

This content is provided in a shared presentation file, which anyone at OSU can view. (Google Docs)

This content is provided in a shared presentation file, which anyone at OSU can view. (PowerPoint on the OneDrive)
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6 Wellness and Making Computing Changes
7 How Software Development Works
8 How Hardware Manufacturing Works
9 The State of Computing